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ABSTRACT

Training and retraining for vocational educators and trainers is badly needed in order for them to keep up with rapidly changing technologies. In order to meet this need, new teaching strategies and new curricula are essential. Some recent research is having an impact on the training of trainers in the United States. This research has focused on technological updating, identification of new trainer competencies, the Developing a Curriculum (DACUM) approach to occupational (job) analysis, and an American Society for Training and Development (ASTD) study that has identified 15 role specializations to be used as a basis for identifying task and competency requirements. Some of the developments and trends in trainer training were found to be: (1) use of performance-based teacher education; (2) distance education (outreach) training programs; (3) adoption of competency-based certification standards; (4) changing roles of the instructor; and (5) establishment of a National Academy for Vocational Education. (Appendixes to the document include a summary of projects to update the technological knowledge of teachers, the DACUM job analysis procedure, an outline of performance-based teacher education, summary of an outreach program, and a list of titles of the performance-based teacher education modules available from the American Association for Vocational Instructional Materials.) (KC)

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RESEARCH AND DEVELOPMENT RELATED TO FUTURE TRENDS
IN THE TRAINING OF TRAINERS

Need for Training

The need for training, and for more effective training, is growing at an exponential rate. An article in the September 1982 Centergram begins as follows:

> Computers. Robotics. CAD/CAM. Microelectronics. Judging by recent advances in these and many other high technology areas, there is little doubt that our machines are capable of almost unimaginable levels of productivity and efficiency. But . . . machines alone are not enough. Raising the United States productive capacity demands the development of "smart" workers as well as "smart" machines: a task that will require a massive training and retraining effort on the parts of employers, labor, and education.[1]

The need for training is not so much a desire to get ahead; it is more nearly a simple desire to keep up with the rapid changes occurring in nearly all businesses and industries. Employers are becoming more and more conscious of the positive relationship between employee training and employee productivity. Many institutions--public and private, individually and collectively--are responding in a variety of ways to this expanded call for training. The training task is not an easy one, however. Training requires large financial commitments and skilled human resources. In these hard economic times, the needed financial resources are scarce, and qualified instructors are frequently hard to find. Industry can often pay salaries that are two or three times higher than what our vocational and technical training institutions can afford to pay. In addition, training materials are often either not available or in need of updating.

Rapid technological change presents a major training problem for developed, as well as developing, countries. Not only is initial training required but frequent retraining is also required as the average number of career changes made by workers accelerates at an unprecedented rate. Traditional methods of training are unsatisfactory by themselves because they can provide neither the quantity nor quality of instructors required. Our training systems have to be more productive and more responsive to rapidly changing training needs.

New teaching strategies and new curricula are essential if we are to meet this training challenge. We must look at the latest research and development findings to ascertain the techniques that really work, as opposed to those that are just different.

[1]"Preparing for High Technology," Centergram (A monthly publication of The National Center for Research in Vocational Education, The Ohio State University). 17 (September 1982): 1.

We also must look at the new technologies themselves. While the new technologies add to our training problems, ironically they may also be part of the needed solution. For example, can we effectively harness the microcomputer to conduct and manage part of the instructional process? Early indications are that the microcomputer will challenge our traditional ways of thinking about teaching. The computer is only a tool, but if properly used, it may have the capacity to become an extension of the human mind, much as machinery in the industrial revolution became an extension of the human hand.

Let's review for a moment what is involved in preparing effective trainers (instructors), regardless of their occupational specialty. The three key dimensions or components of trainer preparation are usually described as (1) general education, (2) technical education, and (3) professional education (pedagogical skills).

While all three components are vital, in trainer training we have been primarily concerned with the technical and professional dimensions. Most of our trainees already possess the necessary general education skills before they are admitted to a training program or hired as instructors. Hence, the topics addressed in the remainder of this paper focus only on the technical and professional dimensions of trainer training.

First, attention is given to some of the recent research that is having an impact on training in the United States. Second, we will take a brief look at several developments and trends in the training of trainers. And third, we will review some of training-related product development efforts that have occurred.

Research on Training

This section of the paper briefly describes four major topics as follows: (1) the technological update of trainers, (2) the identification of new trainer competencies, (3) the DACUM approach to occupational analysis, and (4) the ASTD training and development study.

Technological Update

Considerable attention has been given by researchers to improving the professional training of instructors. However, until recently, little attention has been given to the technical upgrading of trainers. Traditionally, our vocational and technical instructors have been initially selected because of their technical experience and expertise. It has been logically assumed that you could more easily provide the professional training needed than vice versa. Hence, trainers--from at least the trades areas--have been carefully selected on that basis.

It also has been falsely assumed by many that trainers would--on their own and through contact with advisory committees and employers--keep themselves up to date technically. The problem of keeping instructors technically up to date has increased as the technologies in many occupational areas

continue to change and expand rapidly. It has been estimated by some authorities that 30 to 50 percent of the trainers in some fields need technical updating experiences.

A research project initiated in February 1982 by the National Center has two major objectives:

1. To identify the dimensions of the problem of technological update of vocational/technical teachers in the United States, specifically (a) extent of the problem at secondary and postsecondary levels, (b) extent of the problem relative to occupational areas, and (c) technologies in which the problem is most critical.

2. To identify and describe promising approaches to technological update of vocational/technical instructors in the United States and barriers to those approaches, specifically (a) approaches by individual vocational/technical schools, (b) approaches in cooperation with business and industry, and (c) approaches by universities and colleges to technological update of instructors and technicians.

While it is too early to report any conclusive findings, a number of techniques for providing technical updating have been identified, several barriers to participation in updating experiences have been revealed, and numerous factors that encourage participation are surfacing. Two reports--one of the findings of each objective--will be available next year. See Attachment A for a descriptive summary of the technological update project.

Concern for the technical competence of its teachers has caused Cornell University in New York State to carefully identify the technical competencies expected of vocational agriculture instructors in each of six specializations. The technical competency lists are given to the technical departments of the College of Agriculture as a guide to the skills vocational agriculture instructors need. The lists are also used by advisors and prospective teachers in planning their technical experiences and educational programs.

Competency Identification

Research has been conducted at the National Center to identify the professional competencies required of trainers in three new areas: (1) implementing competency-based education, (2) serving students with special/exceptional needs, and (3) assisting students in improving their basic skills.

Competency-based education (CBE) represents an alternative approach to vocational and technical training that is rapidly gaining acceptance across the United States and in several other countries. Since this approach represents a new challenge for the traditional vocational instructor, preparation for the new training responsibilities is necessary.

The DACUM analysis technique was used to identify the competencies needed by vocational teachers to install and conduct CBE programs. The ten expert practitioners on the DACUM panel (1) all had extensive experience in

installing and conducting CBE programs, (2) represented a wide range of occupational areas, (3) represented secondary, postsecondary, and industry training programs, and (4) provided broad geographical representation of the country. A listing of eighty-four competencies, unique to CBE, was generated by this panel.

By law in the United States, vocational educators are obligated to ensure that their programs are equally accessible, accommodating, and fair to all students. Unfortunately, few vocational teachers have been trained to meet the new demands placed upon them. They need to acquire additional teaching skills in order to meet the special training needs of students, who, for example, are enrolled in programs nontraditional for their sex, are physically impaired, or are members of minority groups or emerging groups such as the aged and ex-offenders. Not only are our vocational teachers unprepared to meet the exceptional needs of students enrolling in their classes, but teacher trainers often lack the expertise needed to prepare teachers to meet this challenge.

Recognizing the intent of recent legislation and the lobbying of special groups, National Center staff decided to broaden the definition of the term special needs to include most of the groups with different needs that could be found today in the regular vocational classroom. After much consideration, the following groups were selected:

- Mentally retarded
- Sensory and physically impaired
- Gifted and talented
- Rural/urban economically disadvantaged
- Persons with limited English proficiency
- Members of racial/ethnic minority groups
- Persons enrolled in programs nontraditional for their sex
- Adults requiring retraining (e.g., displaced homemakers, technologically displaced, ex-offenders)

The term exceptional needs was consequently used to incorporate the broader range of needs included.

The next step was to identify teacher competencies. Instead of adapting previously established competencies--as was done in the studies identified in the literature--staff employed the DACUM process to identify competencies from scratch. In this case, it was used eight times--once for each of the exceptional-needs groups identified. The resulting competency lists were then merged and verified, resulting in a list of 380 competency statements.

It is widely recognized that many young people and adults--including some who are enrolled in vocational and technical programs--do not possess the basic math and communication skills needed for success in their educational programs and for successful pursual of productive and satisfying roles in the

American society. Further, many individuals lack the personal skills and self-discipline necessary for success in educational programs and in the world of work.

Again, the DACUM analysis process was used--this time to identify the specific tasks that vocational teachers need to perform in the process of improving their students' basic skills. The intent is not to prepare the vocational teacher to teach remedial classes. Rather, it is to prepare the teacher to reinforce and improve students' basic skills as an ongoing part of the vocational instructional program. A total of eighty-five competency statements resulted from this analysis.

DACUM Approach to Occupational (Job) Analysis

The DACUM (Developing A Curriculum) process is an alternative approach to occupational analysis. It is a modified brainstorming process in which small groups of expert practitioners analyze a job or occupational area and reach consensus on the skills or competencies needed by the workers. The group works for two days under the leadership of a coordinator to develop the analysis.

DACUM has been successfully used to analyze occupations at the professional, technical, skilled, and semi-skilled levels. DACUM operates on the following three premises: (1) expert workers are better able to describe/define their job than anyone else, (2) any job can be effectively and sufficiently described in terms of the tasks that successful workers in that occupation perform, and (3) all tasks have direct implications for the knowledge and attitudes that workers must have in order to perform the tasks correctly.

The DACUM process has been used extensively by the National Center in its own research projects and by many community colleges and technical institutes. It has proven to be a very effective method of quickly determining, at relatively low cost, the competencies or skills that must be performed by persons employed in a given job or occupational area. See Attachment B for more details about the DACUM analysis procedure.

ASTD Training and Development Study

The American Society for Training and Development (ASTD) claims to represent the largest combined group of training, career development, and organizational development professionals in the world. During 1981-83, ASTD is conducting a major competency study in an attempt to more clearly define the training and development field.

The study has identified fifteen role specializations, which they will use as a basis for identifying task and competency requirements. The fifteen roles are grouped into four areas: (1) training and development planning, (2) training and development implementation, (3) training and development research, and (4) training and development support.

For each role, ASTD expects to identify or prepare the following:

- A list of the major outputs and excellence indicators
- A list of the competencies required to produce the outputs
- Rating scales for each competency
- A list of learning resources for building competence in each role[2]

ASTD also expects to identify core competencies across roles. Results are scheduled for publication in mid-1983.

Developments and Trends in Trainer Training

This section of the paper briefly addresses six major developments that are occurring in the training of trainers in the United States and elsewhere. They include (1) widespread adoption and study of performance-based teacher education (PBTE), (2) distance education (outreach) training programs, (3) adoption of competency-based administration training strategies, (4) adoption of competency-based certification standards, (5) changing role of the instructor, and (6) establishment of a National Academy for Vocational Education.

Adoption and Study of PBTE

As most of you know, PBTE is a relatively new and alternative approach to the professional or pedagogical development of trainers. It is an approach to training in which (1) the program is based on the pedagogical competencies required of successful instructors, and (2) the instructor not only must obtain certain knowledge but is required to demonstrate ability to perform essential skills in an actual instructional setting. For more information on the essential elements and desirable characteristics of PBTE and on the research and development work done by the National Center, see Attachment C.

There is considerable evidence that PBTE programs are having a long-term impact on improving the quality and competence of vocational instructors. By providing a flexible and more individualized program, PBTE has enabled instructors to progress at their own best rate to achieve mastery of the desired competencies. It has also increased the productivity of some teacher education programs by shortening the time required to achieve certification. Hence, it will probably not surprise anyone to learn that the adoption of PBTE concepts and materials is spreading.

Many public and private postsecondary institutions are adopting the National Center's PBTE materials for use in their own internal staff development programs. The National Association of Trade and Technical Schools

[2]Patricia A. McLagan, "The ASTD Training and Development Competency Study: A Model Building Challenge," Training and Development Journal. 36 (May 1982): 18-24.

(NATTS) is sponsoring and conducting its own workshops for preparing trainers to utilize the National Center's PBTE materials and PBTE concepts.

Within the last year, the states of Alaska and Arkansas have adopted PBTE as the strongly recommended approach to vocational instructor preparation. An independent study of vocational teacher training in Massachusetts by the Logos Research Institutes gave a strong endorsement to PBTE. After a review of available studies and literature on adult learning and teacher education, Logos Research Institutes strongly recommended that--

> The division of Occupational Education should adopt a performance based curriculum for satisfying the 18-credit-hour teacher training requirement for full approval as a vocational teacher. It is further recommended that curriculum . . . should be based upon the Ohio State University performance-based teacher education model which has been fully developed, validated, and implemented in many states.[3]

In addition to Canada, which has been a major adopter of the PBTE approach, several other countries are either using or contemplating the use of the PBTE approach. In a report on an evaluation of performance-based teacher education for TAFE (technical and further education) teachers in Australia, Hobart and Harris conclude that--

> . . . the PBTE model has considerable potential for TAFE teacher education in Australia, but that its effectiveness depends upon certain conditions being met with respect to its three components--teacher educators, student teachers, and supporting resources--and to its implementation. The study has indicated that PBTE is demanding of the institution that adopts it and that institutional change is required if such a model of teacher education is to be implemented effectively.[4]

Due to the considerable interest in PBTE shown by Australia, a distributorship for the materials has been established at the South Australian College of Advanced Education (formerly the Adelaide College of Arts and Education), Underdale, South Australia.

The government and several educators in the United Kingdom have also been trying out and evaluating the PBTE concepts and materials for possible adoption within their system of further education. In a comprehensive and well-

[3]Edward H. Lareau and others, Learning the Teaching Trade: A Study of Vocational Teacher Training in Massachusetts (Amherst, MA: Logos Research Institutes, 1981), p. 10.

[4]R. Barry Hobart and Roger Harris, Mystery or Mastery: An Evaluation of Performance-Based Teacher Education for TAFE Teachers in Australia (Adelaide, South Australia: Adelaide College of the Arts and Education, 1982), p. iii.

documented report of the actual and potential use of performance-based vocational teacher education, Tuxworth concludes that--

> Although competency-based education of any kind and competency/performance based teacher education in particular should not be seen as an easy remedy for all assumed shortcomings of education and training, the concepts, systems, and materials offer an approach which can help in some aspects. While the actual use of PBTE in the U.K. is very limited at present, it clearly has considerable potential as one operational response to the vast amount of staff development activity which is needed . . . .[5]

Due to the considerable interest in PBTE shown by educators in the United Kingdom, a distributorship for the materials has been established at Stam Press, LTD., EDUCA House, Cheltenham, England.

Other countries, such as Korea and Saudi Arabia, and several Latin American countries are also studying the concepts and materials for possible adaptation and translation.

Distance Education (Outreach) Training Programs

The tremendous distances between trainers and trainees that exist in some countries and in some states in the U.S. have caused considerable experimentation with the use of the modularized PBTE materials and concepts in a distance education, or outreach, mode. Rather than the traditional "trainee comes to the campus" approach, the training is being "taken to the trainees," wherever they are.

Roger Harris of the South Australian College of Advanced Education in Underdale, South Australia, speaks of their Bougainville Papua New Guinea PBTE program as a major success. This is a staff development program for industry trainers at Bougainville Copper Limited, which is located 2,500 miles away from the college. He states that--

> . . . the Bougainville PBTE program has been our most noteworthy success and is unique in Australia as (1) a program adhering to all the principles of PBTE, (2) an approach to staff development of industry trainers by a teacher education department, and (3) a training endeavor that necessarily must occur in an off-campus mode and at a distance (i.e., an outreach program).[6]

[5]Eric N. Tuxworth, Staff Development: A Competency-Based Approach (Huddersfield, England: Huddersfield Polytechnic, in press), p. 41.

[6]Roger Harris, "PBTE Programs at Adelaide College of the Arts and Education in South Australia (1979-1981)," an abstract prepared for the National Conference on Performance/Competency-Based Professional Development of Vocational Teacher and Administrators, Philadelphia, 1982.

See Attachment D for more details about this program.

Another PBTE outreach program worthy of description is the one conducted by the University of Alaska-Juneau in our 49th state. Alaska is vast in size and has both remote villages and modern cities. Prior to 1981, virtually all teachers with degrees were trained in the "lower 48 states" and transplanted to Alaska. Since that time, a PBTE outreach program has been implemented to train teachers in-state. Because the trainees are widely separated geographically, the program requires extensive, long-distance travel by university personnel. The resource persons and trainees are visited at least once per semester in the remote locations and more often elsewhere.

Selected PBTE courses/modules are a required part of the training program; however, the entire 100 modules are available as electives. The program uses twelve master teachers, who work in the field as resource persons under the supervision of the university. Sequin, the PBTE Program Director, states that--

> . . . thus, PBTE--as a proven delivery system for vocational teacher education--has become an integral part of a program for the largest state in the union. Acceptance, by both teachers and school administrators, has been excellent thus far. However, maintaining quality and the problems of logistics remain as primary concerns.[7]

Adoption of Competency-Based Administrator Training Strategies

Several states have given high priority to the professional development of managers or administrators of secondary and postsecondary vocational and technical programs. The preparation of these leadership personnel cannot be left to chance or be assumed to be automatic upon their appointment. Believing that the concepts of PBTE can also be effectively applied to the training of administrators, several states (Illinois, Ohio, Florida, Pennsylvania, Arkansas, New York, Arizona, North Carolina, Michigan, Kansas) are implementing some type of competency-based administrator education (CBAE) program.

Of the approaches to implementing CBAE being utilized, the internship and externship programs appear to be the most successful. Both of these approaches are realistic and effective because they encourage preservice and inservice administrators to (1) assess their individual needs, (2) plan an individualized program of professional development, and (3) develop the competencies actually needed by local administrators of secondary and postsecondary programs.

[7]Armand Sequin, "PBTE in the 49th State--University of Alaska-Juneau," an abstract prepared for the National Conference on Performance/Competency-Based Professional Development of Vocational Teachers and Administrators, Philadelphia, 1982.

Adoption of Competency-Based Certification Standards

Should competency assessment be part of the "entry to the teaching profession" preparation and certification process? Twenty-five states have already answered yes to this question. In twelve states, legislation already has been passed requiring competency assessment before certification. In thirteen other states, either the board of education or the state department of education has mandated some form of competency assessment. Several other states have the matter under discussion and/or have legislation pending.

Much controversy exists about what should be assessed and how the assessment should be conducted. There is, however, general agreement that competency assessment should include measures from the cognitive, affective, and psychomotor domains. There is also agreement that assessment must go beyond a paper-and-pencil cognitive test and include assessment of actual classroom performance.

Several states are using a three-person assessment team--consisting of a principal, peer teacher, and teacher trainer--to make the on-the-job assessment. A number of states have selected some of the PBTE competencies as at least a partial basis for the certification of their vocational instructors. In an effort to recognize and appropriately reward outstanding instructors, Arkansas has established three levels of certification: instructor, senior instructor, and master instructor.

The assessment of trainer competence is a complex and demanding task, but the public's right to and demand for accountability, as well as the profession's need for safeguards against the certification of incompetent persons, necessitates the establishment of adequate and fair appraisal systems.

Changing Role of the Instructor

As one looks at the increased use of modularized instructional materials for preparing vocational students, vocational instructors, and vocational administrators, one cannot help but wonder what is happening to the traditional role of the instructor. Simply put, it is changing from that of lecturer and large-group discussion leader to that of resource person or learning manager.

The concept of the resource person as an advisor/counselor, facilitator/helper, and assessor/evaluator has been advocated by the National Center's PBTE staff since the early 1970s. There now appears to be adequate evidence that the role advocated is both realistic and essential to successful competency- or performance-based instructional programs.

In competency-based education, resource persons (trainers) need less time for planning lessons, lecturing, conducting large-group discussions, and developing and grading paper-pencil tests. Thus, the trainer is free to devote more time to really managing the learning process by advising individual students, assessing student progress, leading small-group discussions,

facilitating peer interaction, and developing supportive media and instructional materials.

There is considerable evidence confirming that the role of the resource person is essential if modularized materials are to be used successfully. As Tuxworth points out, "There are risks inherent in the misapplication of PBTE, particularly when modules and systems are taken to be a substitute for human interaction."[8] Trainers cannot and should not be left on their own to complete modules and view media. The resource person must arrange for seminars, individual conferences, and other forms of peer and trainer-trainee interaction.

An analogy can be drawn to the auto mechanic who fails because he misuses an excellent tool. The trainer who does not perform the required functions of the resource person role when using modularized materials will also fail.

Establishment of the National Academy for Vocational Education

The increased demand for training professionals at all levels in vocational education has given rise to the establishment of a National Academy for Vocational Education as an integral part of the National Center for Research in Vocational Education. The National Academy is charged by the federal government with responsibility for addressing the professional development and leadership needs of the many professionals making up the vocational education community.

The National Academy operates both an institute and an in-residence program. The institute program plans, promotes, and conducts workshops, seminars, and conferences on a regional and nationwide basis for vocational, technical, and other training professionals. Activity topics are derived from various sources, including needs assessments, national priority issues, research and development efforts of the National Center, advisory groups, and specific field requests from state agencies and professional groups. Most of these activities are conducted throughout the United States on a cost-recovery basis, with income received from participant registration. To date during its successful four and a half years of operation, the National Academy has conducted 260 activities and served 8,500 trainees.

The in-residence program is an open-entry/open-exit program, which offers career, vocational, technical, and other training professionals an opportunity for a residence experience at the National Center. This program is open to both national and international participants, who plan and carry out an individualized professional development plan by using the human and material resources of the National Center, The Ohio State University, and many other

[8]Eric N. Tuxworth, "Staff Development: A Competency Based Approach," Research Project No. 42, Further Education Curriculum Review and Development Unit (Huddersfield, England: Huddersfield Polytechnic, n.d.), p. iv.

cooperating agencies. To date, approximately 170 persons have participated in this program, over 40 percent of whom have been international participants.

While the National Academy's programs cannot begin to meet the training needs of all vocational and technical personnel in the United States, the National Academy does plan and conduct--with the help of many consultants--most of the regional and national workshops and conferences held concerning vocational education. Hence, the National Academy is providing a vital leadership development function, especially for teacher trainers, state department of education personnel, and many program administrators.

Training-Related Product Development

When training vocational and technical education instructors, planners, curriculum specialists, supervisors, and administrators, it is essential to utilize the most relevant and effective curriculum materials available. As everyone knows, the development of high-quality curriculum materials takes considerable time, is costly, and requires highly skilled curriculum, media, and other production specialists.

Even though the idea of a national curriculum is unthinkable in the United States with our strong local and state control of education, many of the professional-level materials needed for preparing trainers and administrators are being developed at the national level. On the other hand, most curriculum materials for secondary and postsecondary vocational students are developed at either the state or local level. An obvious advantage of the locally developed curriculum is that it can be customized to meet the needs of local business and industry and the trainees to be involved.

Let's look for a moment at some of the more significant curriculum development efforts designed to help meet the training needs of vocational instructors, administrators, and other trainees. As one might expect, since the National Center's PBTE efforts met with success, additional modularized performance-based teacher education materials have been developed and will soon be published. A multistate consortium effort has also been supporting the development of competency-based modules designed specifically for the preparation of vocational administrators. Finally, we will briefly describe the new Vocational Education Curriculum Materials (VECM) data base, which has been established through the National Center's Clearinghouse.

PBTE Curriculum Development

Two major efforts have been underway in the PBTE arena. First, twenty-seven new modules are being developed to address the competencies identified in the research reported earlier in this paper. The same basic process of development, review, and field tesing that was used in preparing the first 100 modules is being used again.

Six modules make up the new K-category on implementing competency-based education (CBE), thirteen modules are included in the new L-category on

serving students with special/exceptional needs, and six titles make up the new M-category on assisting students in improving their basic skills. One module on learning styles and another on combatting problems of student chemical use are being added to Categories C and E, respectively. For a listing of the 127 titles expected to be available by March 1983, see Attachment E.

The other major PBTE development activity has been the revision and updating of the original 100 PBTE modules. While carefully retaining the format and basic configuration of the original module series, the module illustrations have been improved, and the content and outside references have been updated in each module. In making these revisions, recognition of the new competencies and cross-referencing to the new titles, where appropriate, have also been accomplished. The revised second editions of the modules are already being phased into the distribution channels as they come off the production line.

Competency-Based Administrator Modules

Since the fall of 1978, a group of ten states and the National Center have been cooperatively developing and field testing a series of twenty-nine competency-based modules designed specifically for the preparation of vocational education administrators (managers, principals, directors) at the secondary and postsecondary levels. Based on 166 competencies identified and nationally verified as important in previous U.S. Office of Education-sponsored research,[9] these materials are gaining wide acceptance in many states.

The materials utilize a format similar to the PBTE materials and have gone through a rigorous development process of conceptualization, field review, field test, and revision for publication. Each module covers a single broad competency or skill area needed by local administrators to carry out their responsibilities effectively. Through a variety of learning activities, learners obtain background information concerning the skill covered, apply that information in practice or simulated situations, and eventually demonstrate the competency in an actual administrative situation.

The modules can be used in preservice or inservice training workshops, graduate courses, intern or extern leadership development programs, and in-house staff development programs. While the modules are designed for individual use, permit self-pacing, and require few outside resources, they are not totally self-instructional. They should be used under the guidance of a qualified resource person, who can advise trainees, facilitate the various learning activities, and evaluate trainees' progress.

[9]Robert E. Norton; Kristy L. Ross; Gonzalo Garcia; and Barry Hobart, The Identification and National Verification of Competencies Important to Secondary and Postsecondary Administrators of Vocational Education (Columbus, OH: The Center for Vocational Education, The Ohio State University, 1977).

At this time, sixteen titles are available from our National Center. By December 1982, all twenty-nine modules and additional supportive materials will be available from the American Association for Vocational Instructional Materials (AAVIM) in Athens, Georgia. For a list of the titles in this leadership and training series, see Attachment E.

Vocational Education Curriculum Materials (VECM)

As mentioned earlier, curriculum materials for student use--with the exception of commercially published textbooks--are almost always developed at the state or local education agency level. In an attempt to promote the sharing of materials and avoid unnecessary duplication of effort, the National Center is currently establishing the Vocational Education Curriculum Materials (VECM) data base. It will be a comprehensive, centralized, and computerized data base of information on curriculum materials. The data base will contain information on both print and nonprint products. Over 1500 items will be in the data base by the end of 1982.

Only current vocational and technical curriculum materials that have an availability source are entered into the data base. Each entry includes the following information: title, date, sponsoring agency, developer, subject matter classification (using "A Classification of Instructional Programs," the system developed by the National Center for Education Statistics), educational level, intended user, student target population, description of the material, copyright restrictions, and availability source. Online searches, printed reports, and microfiche can be generated from the VECM data base.

The data base is currently a private file for use by the National Center, regional curriculum coordination centers, and state liaison representatives. When the size of the data base reaches 4,000 entries, however, steps will be taken to make it a public file.

Summary

A summary of the many significant events that are having an impact on how we will be training trainers in the future is impossible. The one thing that is certain is that changes are needed in all countries if we are to keep pace with the expanding need for high-quality training. We must look to research and development activities for at least part of the solutions needed. And we must not be afraid to try new approaches, new materials, and new institutional and organizational structures, if we are to meet the challenge.

In this paper, we have (1) reviewed some of the recent research that is affecting training in the United States and elsewhere, (2) looked at some of the developments and trends affecting the training of trainers, and (3) reviewed some of the curriculum development and exchange efforts that have occurred. While none of these are panaceas for all the training problems we face, each offers some potential for improving the situation.

The goal of increasing the human potential demands that we constantly seek to provide the most relevant training we can devise. With that goal in mind, we are committed to conducting continuing research and development aimed at improving the training process. We are also eager to learn of the work being done in your countries that will contribute to this same goal.

ATTACHMENT A

PROJECT SUMMARY

Project Title: Technological Update of Teachers

Project Director: James B. Hamilton

Problem Statement:

Keeping vocational and technical instructors abreast of the technology of their own occupational fields is becoming increasingly more important yet difficult. Technologies change and expand rapidly; new technology is applied within existing occupations; the turnover rate among teachers has been reduced, resulting in longer position tenure. All these factors combine to cause increasing disparity between teachers' technical skills and knowledge and current practices in their fields of instruction. Furthermore, many qualified teachers, especially at the postsecondary level, are being siphoned off into industry; vocational education must compete with industry due to a generalized shortage of qualified personnel in many technical areas.

Objectives:

1. To identify the dimensions of the problem of technological update of vocational/technical teachers in the United States, specifically (a) the extent of the problem at secondary and postsecondary levels, (b) the extent of the problem relative to occupational areas, and (c) the technologies in which the problem is most critical.

2. To identify and describe promising approaches to technological update of vocational/technical instructors in the United States and barriers to those approaches, specifically (a) approaches by individual vocational/technical schools, (b) approaches in cooperation with business and industry, and (c) approaches by universities and colleges to technological update of instructors and technicians.

Procedures:

A literature search will be conducted to assist in identifying the parameters of the problem. Knowledgeable consultants in nine states will be asked to prepare papers defining the problem as it occurs at the secondary level in each of their own states; consultants in nine additional states will be asked to prepare similar papers concerning the postsecondary level. Topical outlines will be developed by National Center staff for use by consultants in preparing their papers. National Center staff will then summarize and analyze the information and report the findings in a report of the status of technological update.

Approximately 500 secondary and postsecondary institutions will be asked to provide materials describing their approaches to the problem. The approaches described will be classified, and promising approaches will be selected. A general description for each classification of promising approach will be

written, as well as a description of a specfic program exemplifying the approach. These findings will be incorporated into a product presenting these general and specific program approaches to technological update.

Deliverables:

"Technological Update of Vocational/Technical Teachers: A Status Report"

"Approaches to Technological Update of Vocational/Technical Teachers"

ATTACHMENT B

THE DACUM JOB ANALYSIS PROCEDURE

DACUM is a relatively new and innovative approach to occupational (job) analysis. It has proven to be a very effective method of quickly determining, at relatively low cost, the competencies or tasks that must be performed by persons employed in a given job or occupational area.

The profile chart that results from the DACUM analysis is a detailed and graphic portrayal of the skills or competencies involved in the occupation being studied. The DACUM analysis can be used as a basis for (1) curriculum development, (2) student advisement, (3) training needs assessments, (4) recording of student competency achievement, and (5) competency test development.

DACUM has been successfully used to analyze occupations at the professional, technical, skilled, and semiskilled levels. DACUM operates on the following three premises: (1) expert workers are better able to describe/ define their job than anyone else, (2) any job can be effectively and sufficiently described in terms of the tasks that successful workers in that occupation perform, and (3) all tasks have direct implications for the knowledge and attitudes that workers must have in order to perform the tasks correctly.

A carefully chosen group of about 8-12 experts from the occupational area form the DACUM committee. Committee members are recruited directly from business, industry, or the professions. The committee works under the guidance of a coordinator for two days to develop the DACUM chart. Modified small-group brainstorming techniques are used to obtain the collective expertise and consensus of the committee.

The DACUM committee is carefully guided through each of the following steps by the coordinator:

1. Orientation
2. Review of job or occupational area description
3. Identification of general areas of job responsibility
4. Identification of specific tasks performed in each of the general areas of responsibility
5. Review and refinement of task statements
6. Sequencing of task statements
7. Other options, as desired

Because of their current occupational expertise, committee participants do not need to make any advance preparations. Participants on past DACUM committees have, without exception, found the activity to be a professionally stimulating and rewarding experience.

SOURCE: Adapted from R. E. Adams, DACUM: An Approach to Curriculum, Learning, and Evaluation in Occupational Training, A Nova Scotia Newstart Report (Ottawa, Canada: Department of Regional Economic Expansion, 1975).

ATTACHMENT C

PERFORMANCE-BASED TEACHER EDUCATION

What is PBTE?

- A new approach for training instructors and teachers
- Emphasizes the actual performance of essential teaching skills
- Based on five essential elements and eight desirable characteristics (see back for details)

What work has been done?

- Research--384 important teaching skills identified
- Development
  - Materials were cooperatively developed, field tested, and revised
  - 100 modules were clustered into ten major categories
  - User's guides and orientation media/materials were developed
  - Materials proven effective through testing
  - Materials refined and published (AAVIM)
- Dissemination
  - Over 60 implementation workshops conducted
  - National Academy and publisher continue to offer and sponsor workshops throughout the country
  - Technical assistance provided to users on request
  - Material distributorships in United Kingdom and Australia

What has happened?

- Major types of users
  - Colleges and universities, teachers and instructors
  - Postsecondary institutions, instructors
  - Secondary schools, teachers
  - Business and industry, trainers
- Extent of use
  - Over 3,000 customers
  - Over 1,200 educational agencies and over 400 businesses
  - Used in all 50 states and all Canadian provinces
  - Ordered by 30 other countries
- Effects of use
  - Improved quality of instructors and teachers
  - More effective teacher education programs
  - More cost-effective training
  - Increased use of competency-based instruction by teachers

What is planned for the future?

- Translation of some modules into Spanish and possibly other languages
- Development of additional modules for administrators and supervisors
- Adaptation of some modules for business and industry use

Prepared by Robert E. Norton, Senior Research and Development Specialist, The National Center for Research in Vocational Education, The Ohio State University, Columbus, Ohio.

PBTE Essential Elements

There are five essential elements that serve to establish the operational framework for any PBTE (or PBIT) program. The essential elements are:

- Competencies to be achieved are carefully identified, verified, and made public in advance.
- Criteria to be used in assessing achievement and the conditions under which achievement will be assessed, are explicitly stated and made public in advance.
- Assessment of competency takes the trainee's knowledge and attitudes into account but depends upon actual performance as the primary source of evidence.
- The instructional program provides for the individual development and evaluation of each of the competencies specified.
- Trainees progress through the instructional program at their own rate by demonstrating the attainment of specified competencies.

In addition to the essential elements, one also commonly finds several additional elements that might best be labeled "desirable characteristics" associated with most PBTE programs. The desirable characteristics may include any or all of the following elements:

- Instruction is individualized to maximum extent possible.
- Frequent feedback is provided the learner.
- Program provides for open-entry/open-exit.
- Modules or other individual learning packages are used.
- Instruction is based on realistic work situations.
- Multimode required and optional learning activities are used.
- Criterion-referenced evaluation is used.
- Program evaluation and revision are continuous.

ATTACHMENT D

An Outreach Program of Professional Development for Industry Trainers Using the PBTE/CBSD Model

Roger Harris
Advanced Study Center Fellow
The National Center for Research in Vocational Education

1. Introduction

This case study involves a PBTE/CBSD program conducted by Adelaide College of the Arts and Education (ACAE) in South Australia for industry trainers employed by Bougainville Copper Limited (BCL) in Papua New Guinea; that is, a staff development exercise between two institutions approximately 2,500 miles apart.

2. Background and program description

Began in February 1979 with 22 expatriate trainers in BCL's training center. Most of the trainers had had no previous instructional training. Program is now in its third year. Under contract, BCL funds one extra ACAE faculty, five 2-week visits per year and some clerical assistance. Three trainers with some prior instructional training were used as on-site resource persons (RP), and in second year, two outstanding students from initial year also acted in this capacity. There are three levels of training in a stepladder approach.

3. Program analysis in terms of PBTE/CBSD principles

(1) Essential characteristics

- competencies are carefully identified, specifically stated and made public. NCRVE modules (mainly A, B, C, D categories) used as delivery system, clearly marked on individual Competency Profile Charts
- criteria for assessment are explicit and made public. TPAF's in modules used
- program is designed to develop and evaluate each trainer's achievement of the competencies
- assessment uses performance as major source of evidence. After practice with peers and on-site RP clearance, trainers "test out" with actual class--either visited by faculty RP, or send videotape to ACAE. High standards set right from the beginning
- rate of progress is determined by demonstrated competency.

(2) Desirable characteristics

- learning materials and methods, rate of progress and module sequencing are all individualized

- trainers' professional development is continually guided by feedback
- focus is on exit, not entrance, requirements
- program of competencies is modularized. Modules almost self-contained, an important factor in the case of this remote site
- total program is field-centered
- trainers have a part in designing their instructional system--some electives, choice of learning routes, sequencing
- program is inservice in character, underlining the philosophy that professional role development is a continuing process
- role integration is gradually reinforced--a more holistic concept of training is fostered after mastery of the basic competencies and a more realistic training presentation accomplished
- program is open and regenerative. Open entry-open exit. Evaluations undertaken (e.g., see Hobart and Harris, ERIC ED 198311).

4. Main limitations

(1) no formal job analysis undertaken specifically of BCL training role
(2) lack of relevant supplementary resources on the remote island
(3) tyranny of distance plagues the movement of materials, assignments and feedback between sites
(4) program depends heavily on continued funding from BCL.

5. Conclusions

This program is an example of:

(1) successful implementation of PBTE/CBSD principles and practices
(2) a worthwhile approach to staff development of industry trainers (by a department of teacher education)
(3) the applicability of the PBTE materials, developed by NCRVE and published by AAVIM, to settings which are industrial in nature and non-American in cultural orientation
(4) an educational/training endeavor which necessarily must occur in an offcampus mode and at a distance (i.e., an outreach program).

Address presented at the National Conference on PBTE, CBSD and CBAE, Philadelphia, PA on October 13-15, 1981.

Titles of the National Center's Performance-Based Teacher Education Modules

Category A: Program Planning, Development, and Evaluation

A-1 Prepare for a Community Survey
A-2 Conduct a Community Survey
A-3 Report the Findings of a Community Survey
A-4 Organize an Occupational Advisory Committee
A-5 Maintain an Occupational Advisory Committee
A-6 Develop Program Goals and Objectives
A-7 Conduct an Occupational Analysis
A-8 Develop a Course of Study
A-9 Develop Long-Range Program Plans
A-10 Conduct a Student Follow-Up Study
A-11 Evaluate Your Vocational Program

Category B: Instructional Planning

B-1 Determine Needs and Interests of Students
B-2 Develop Student Performance Objectives
B-3 Develop a Unit of Instruction
B-4 Develop a Lesson Plan
B-5 Select Student Instructional Materials
B-6 Prepare Teacher-Made Instructional Materials

Category C: Instructional Execution

C-1 Direct Field Trips
C-2 Conduct Group Discussions, Panel Discussions, and Symposiums
C-3 Employ Brainstorming, Buzz Group, and Question Box Techniques
C-4 Direct Students in Instructing Other Students
C-5 Employ Simulation Techniques
C-6 Guide Student Study
C-7 Direct Student Laboratory Experience
C-8 Direct Students in Applying Problem-Solving Techniques
C-9 Employ the Project Method
C-10 Introduce a Lesson
C-11 Summarize a Lesson
C-12 Employ Oral Questioning Techniques
C-13 Employ Reinforcement Techniques
C-14 Provide Instruction for Slower and More Capable Learners
C-15 Present an Illustrated Talk
C-16 Demonstrate a Manipulative Skill
C-17 Demonstrate a Concept or Principle
C-18 Individualize Instruction
C-19 Employ the Team Teaching Approach
C-20 Use Subject Matter Experts to Present Information
C-21 Prepare Bulletin Boards and Exhibits
C-22 Present Information with Models, Real Objects, and Flannel Boards
C-23 Present Information with Overhead and Opaque Materials
C-24 Present Information with Filmstrips and Slides
C-25 Present Information with Films
C-26 Present Information with Audio Recordings
C-27 Present Information with Televised and Videotaped Materials
C-28 Employ Programmed Instruction
C-29 Present Information with the Chalkboard and Flip Chart
C-30 Provide for Students' Learning Styles

Category D: Instructional Evaluation

D-1 Establish Student Performance Criteria
D-2 Assess Student Performance: Knowledge
D-3 Assess Student Performance: Attitudes
D-4 Assess Student Performance: Skills
D-5 Determine Student Grades
D-6 Evaluate Your Instructional Effectiveness

Category E: Instructional Management

E-1 Project Instructional Resource Needs
E-2 Manage Your Budgeting and Reporting Responsibilities
E-3 Arrange for Improvement of Your Vocational Facilities
E-4 Maintain a Filing System
E-5 Provide for Student Safety
E-6 Provide for the First Aid Needs of Students
E-7 Assist Students in Developing Self-Discipline
E-8 Organize the Vocational Laboratory
E-9 Manage the Vocational Laboratory
E-10 Combat Problems of Student Chemical Use

Category F: Guidance

F-1 Gather Student Data Using Formal Data-Collection Techniques
F-2 Gather Student Data Through Personal Contacts
F-3 Use Conferences to Help Meet Student Needs
F-4 Provide Information on Educational and Career Opportunities
F-5 Assist Students in Applying for Employment or Further Education

Category G: School–Community Relations

G-1 Develop a School–Community Relations Plan for Your Vocational Program
G-2 Give Presentations to Promote Your Vocational Program
G-3 Develop Brochures to Promote Your Vocational Program
G-4 Prepare Displays to Promote Your Vocational Program
G-5 Prepare News Releases and Articles Concerning Your Vocational Program
G-6 Arrange for Television and Radio Presentations Concerning Your Vocational Program
G-7 Conduct an Open House
G-8 Work with Members of the Community
G-9 Work with State and Local Educators
G-10 Obtain Feedback about Your Vocational Program

Category H: Vocational Student Organization

H-1 Develop a Personal Philosophy Concerning Vocational Student Organizations
H-2 Establish a Vocational Student Organization
H-3 Prepare Vocational Student Organization Members for Leadership Roles
H-4 Assist Vocational Student Organization Members in Developing and Financing a Yearly Program of Activities
H-5 Supervise Activities of the Vocational Student Organization
H-6 Guide Participation in Vocational Student Organization Contests

Category I: Professional Role and Development

I-1 Keep Up to Date Professionally
I-2 Serve Your Teaching Profession
I-3 Develop an Active Personal Philosophy of Education
I-4 Serve the School and Community
I-5 Obtain a Suitable Teaching Position
I-6 Provide Laboratory Experiences for Prospective Teachers
I-7 Plan the Student Teaching Experience
I-8 Supervise Student Teachers

Category J: Coordination of Cooperative Education

J-1 Establish Guidelines for Your Cooperative Vocational Program
J-2 Manage the Attendance, Transfers, and Terminations of Co-Op Students
J-3 Enroll Students in Your Co-Op Program
J-4 Secure Training Stations for Your Co-Op Program
J-5 Place Co-Op Students on the Job
J-6 Develop the Training Ability of On-the-Job Instructors
J-7 Coordinate On-the-Job Instruction
J-8 Evaluate Co-Op Students' On-the-Job Performance
J-9 Prepare for Students' Related Instruction
J-10 Supervise an Employer–Employee Appreciation Event

Category K: Implementing Competency-Based Education (CBE)

K-1 Prepare Yourself for CBE
K-2 Organize the Content for a CBE Program
K-3 Organize Your Class and Lab to Install CBE
K-4 Provide Instructional Materials for CBE
K-5 Manage the Daily Routines of Your CBE Program
K-6 Guide Your Students Through the CBE Program

Category L: Serving Students with Special/Exceptional Needs

L-1 Prepare Yourself to Serve Exceptional Students
L-2 Identify and Diagnose Exceptional Students
L-3 Plan Instruction for Exceptional Students
L-4 Provide Appropriate Instructional Materials for Exceptional Students
L-5 Modify the Learning Environment for Exceptional Students
L-6 Promote Peer Acceptance of Exceptional Students
L-7 Use Instructional Techniques to Meet the Needs of Exceptional Students
L-8 Improve Your Communication Skills
L-9 Assess the Progress of Exceptional Students
L-10 Counsel Exceptional Students with Personal–Social Problems
L-11 Assist Exceptional Students in Developing Career Planning Skills
L-12 Prepare Exceptional Students for Employability
L-13 Promote Your Vocational Program with Exceptional Students

Category M: Assisting Students in Improving Their Basic Skills

M-1 Assist Students in Achieving Basic Reading Skills
M-2 Assist Students in Developing Technical Reading Skills
M-3 Assist Students in Improving Their Writing Skills
M-4 Assist Students in Improving Their Oral Communication Skills
M-5 Assist Students in Improving Their Math Skills
M-6 Assist Students in Improving Their Survival Skills

RELATED PUBLICATIONS

Student Guide to Using Performance-Based Teacher Education Materials
Resource Person Guide to Using Performance-Based Teacher Education Materials
Guide to the Implementation of Performance-Based Teacher Education
Performance-Based Teacher Education: The State of the Art, General Education and Vocational Education

For information regarding availability and prices of these materials contact—AAVIM, American Association for Vocational Instructional Materials, 120 Driftmier Engineering Center, University of Georgia, Athens, Georgia 30602, (404) 542-2586

UPD 7498/8-82

ISBN 0-89606-095-0

ATTACHMENT F

COMPETENCY-BASED ADMINISTRATOR EDUCATION MATERIALS
Leadership & Training (LT) Series

CATEGORY A: PROGRAM PLANNING, DEVELOPMENT, AND EVALUATION

LT-A-1 Develop Local Plans for Vocational Education: Part I
LT-A-2 Develop Local Plans for Vocational Education: Part II
LT-A-3 Direct Program Evaluation

CATEGORY B: INSTRUCTIONAL MANAGEMENT

LT-B-1 Direct Curriculum Development
LT-B-2 Guide the Development and Improvement of Instruction
LT-B-3 Manage the Development of Master Schedules

CATEGORY C: STUDENT SERVICES

LT-C-1 Manage Student Recruitment and Admissions
LT-C-2 Provide Systematic Guidance Services
LT-C-3 Maintain School Discipline
LT-C-4 Establish a Student Placement Service and Coordinate Follow-up Studies

CATEGORY D: PERSONNEL MANAGEMENT

LT-D-1 Select School Personnel
LT-D-2 Supervise Vocational Education Personnel
LT-D-3 Evaluate Staff Performance
LT-D-4 Manage School Personnel Affairs

CATEGORY E: PROFESSIONAL AND STAFF DEVELOPMENT

LT-E-1 Appraise the Personnel Development Needs of Vocational Teachers
LT-E-2 Provide a Staff Development Program
LT-E-3 Plan for Your Professional Development

CATEGORY F: SCHOOL-COMMUNITY RELATIONS

LT-F-1 Organize and Work with a Local Vocational Education Advisory Council
LT-F-2 Promote the Vocational Education Program
LT-F-3 Involve the Community in Vocational Education
LT-F-4 Cooperate with Governmental and Community Agencies

CATEGORY G: FACILITIES AND EQUIPMENT MANAGEMENT

LT-G-1 Provide Buildings and Equipment for Vocational Education
LT-G-2 Manage Vocational Buildings and Equipment
LT-G-3 Manage the Purchase of Equipment, Supplies, and Insurance

CATEGORY H: BUSINESS AND FINANCIAL MANAGEMENT

LT-H-1 Prepare Vocational Education Budgets
LT-H-2 Identify Financial Resources for Vocational Education
LT-H-3 Develop Applications and Proposals for Funding Vocational Education

CATEGORY I: PROGRAM IMPROVEMENT

LT-I-1 Use Information Resources to Help Improve Vocational Education Programs
LT-I-2 Use Inquiry Skills to Help Improve Vocational Education Programs

SUPPORTIVE MATERIALS

Guide to Vocational-Technical Education Program Alternatives: Secondary and Postsecondary--An Introduction

Guide to Using Competency-Based Vocational Education Administrator Materials

Resource Person's Guide to Implementing Competency-Based Administrator Education Concepts and Materials

An Introduction to Competency-Based Administrator Education (slide/audiotape)

*These are the titles of the 29 CBAE modules, categorized and numbered as they will be when published by AAVIM. The expected date of availability from AAVIM is December 1982.